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RESEARCH AID

CONTRIBUTION  
OF THE RAILROADS AND INLAND WATERWAYS  
TO THE GROSS NATIONAL PRODUCT  
OF COMMUNIST CHINA  
1956



CIA/RR RA 59-10

June 1959

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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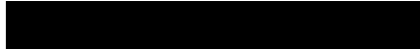
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FOREWORD

This research aid represents a first attempt to summarize and interpret available information pertaining to the contribution of the modern transportation sector of the Chinese Communist economy to the gross national product (GNP) of China. The contribution of the railroads in 1955 and 1956 and of the inland waterways in 1956 are covered in some detail. Lack of data prevented the making of estimates for any other years for railroads and inland waterways and precluded any estimates for coastal shipping and highway transport.

Because this research aid represents a new approach to the analysis of transportation in Communist China and because the available data are sparse and imprecise, the results obtained are necessarily tentative. Availability of additional data in the future undoubtedly will result in a refinement of the estimates presented herein, but it is believed that none of them will be found to be of the wrong order of magnitude. Suggestions and criticisms regarding the content of this research aid are invited.

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CONTRIBUTION OF THE RAILROADS AND INLAND WATERWAYS  
TO THE GROSS NATIONAL PRODUCT OF COMMUNIST CHINA\*

1956

Summary

The gross product of the railroads of Communist China\*\* is estimated to have been 1.581 billion yuan\*\*\* in 1955 and 2.141 billion yuan in 1956 -- 1.71 percent and 2.01 percent, respectively, of the gross national product (GNP). The increase in the proportional contribution of the railroads to GNP probably reflects, at least in part, the rapid industrialization of the country. In the US the railroads contributed about 2.11 percent of national income in 1956.

In 1956 the gross product of the railroads of Communist China was 35.4 percent above that of 1955. At the same time, operating revenue increased by 25.1 percent. The more than proportionate increase in gross product resulted primarily from a 12.8-percent decrease in operating costs per ton-kilometer and from an increase of 2.2 percent in operating revenue per ton-kilometer.

In 1956 the wage and social insurance costs of the railroads of Communist China amounted approximately to 339.5 million yuan, or 28.6 percent of total operating costs. On the basis of wages the total number of active operating railroad workers in 1956 has been estimated at 365,000. Direct statements of the size of the railroad labor force, which apparently include numerous staff and administrative personnel and probably most of the workers engaged in new construction activities, have ranged from 860,000 to 2.04 million.

The depreciation charge on the railroads of Communist China in 1956 amounted to approximately 423.7 million yuan, or 35.7 percent of the total operating costs. The rate of depreciation for railroad transport in 1956 reportedly was 3.7 percent, of which 1.3 percent was for basic depreciation. In 1956 the total fixed assets of the railroads were

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\* The estimates and conclusions contained in this research aid represent the best judgment of this Office as of 1 May 1959.

\*\* Gross product of railroads is a summation of the wages of operating employees, social insurance costs, depreciation allowances, profits, and taxes.

\*\*\* Because of the difficulty of determining a valid exchange rate, yuan have not been converted into dollars. The rate of 2.46 yuan to US \$1 usually quoted is based on the yuan-sterling rate for telegraphic transfers.

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valued at 74 yuan for each 1,000 combined ton-kilometers produced, or an approximate total of 11.45 billion yuan. The Ministry of Railroads reportedly stands at the top of the list of all the large departments of the nation's economy with respect to the amount of fixed property possessed by each department.

The reported profits of 1.463 billion yuan for Chinese Communist railroads in 1956 probably included both net profits and basic depreciation charges. Analysis of a statement by T'eng Tai-yuan, Minister of Railroads, concerning the aggregate surplus of railroad revenue over operating expenses remitted to the central government during the First Five Year Plan (1953-57) indicates that when the Chinese Communists use the term profits, they mean net profits plus basic depreciation. During the First Five Year Plan, investment in railroads was nearly identical with the figure for profits plus basic depreciation allowances turned over to the central government.

The gross product of the inland waterways of Communist China in 1956 is estimated to have been 158.9 million yuan, or an amount equal to 7.4 percent of the gross product of the railroads. Of this figure, wage and social insurance costs amounted to 50.6 million yuan, and profits plus basic depreciation charges amounted to 85.2 million yuan. On the basis of wages, it is estimated that the total number of active operating inland waterway workers amounted to 43,600 in 1956. This figure is to be compared with an announced figure of 162,000 workers in the labor force employed in government-operated river and maritime transport and harbor operations in 1956. This latter figure apparently includes workers employed in coastal shipping as well as those engaged in inland waterway transport and undoubtedly includes stevedores and longshoremen as well as many administrative and staff personnel of the Ministry of Communications not connected directly with waterway operations.

In 1956, depreciation charges per unit of output for inland waterway transport on the Yangtze River were 19.7 percent less than for railroad transport because the depreciation charges for waterways contained no item for depreciation of roadbed and track. The depreciation rate for inland waterway transport on the Yangtze River was 6 percent, of which 3.2 percent was for basic depreciation. This rate should be viewed in relation to the total fixed assets of the inland waterways of approximately 600 million yuan, or about 37 yuan per 1,000 combined ton-kilometers. The rate of profit earned in transportation on the Yangtze River in 1956 was only one-third of the rate earned on the railroads.

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I. Introduction.

A. Gross National Product.

Gross national product (GNP) is the value of the total output of goods and services produced by a nation during a given period of time. By adding the net contribution made by each enterprise or economic sector to the total value of production, it is possible to arrive at a total for the whole economy which represents the market value of production, or GNP. In order to arrive at the correct result, however, it is necessary to deduct the purchases made from other firms or sectors from the total sales of each enterprise or sector. If the gross value of production of all firms were added together, the same commodities would be counted a great many times instead of just once. Thus the value added by a firm -- that is, the value created by the activities of the firm and its employees alone -- can be measured by the difference between the market value of the goods that have been turned out by the firm and the cost of those goods and materials purchased from other firms. <sup>1</sup>/<sub>\*</sub> The sum total of value added for all productive units or economic sectors in the economy is equal to GNP.

The value created by an individual productive unit or sector can also be measured by the so-called "gross product" approach. The gross product measurement is concerned primarily with the individual elements that are allocated out of the firm's total productive contribution rather than with the value of production and the cost of goods and materials purchased from other firms. The basic elements in the gross product of the firm consist of the payments to the factors of production used by the firm. In addition, such items as depreciation and taxes are considered to be allocations made from the total productive contribution of the firm. This approach is the obverse of value added -- what the value-added approach obtained as a residual by deducting cost of goods and materials purchased from other firms from the total value of production, the gross product method builds up element by element. <sup>2</sup>/

B. Value Added by Transportation or Gross Transport Product.

The total market value of output of the transportation sector of an economy during a given period of time can be derived by either the value-added or the gross product method. Value added by transportation is calculated by subtracting from total transport revenue the cost of fuel, power, supplies, equipment, materials, tools, and other commodities purchased from other sectors of the economy and utilized by the transportation sector during the period. Gross transport

\* For serially numbered source references, see Appendix C.

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product is derived by adding together such items as the wages and salaries of transportation workers, social insurance costs, depreciation, profits, and taxes -- that is, the allocations of gross revenue to the factors of production used by the transportation sector. Value added by or gross product of railroads and inland waterways can be derived in the same manner.

The size of the gross transport product is largely determined by the level of activity of the industrial sector of the economy. The volume of goods manufactured obviously has an effect on the amount of transportation required. At the same time, the volume of output in the transportation industries influences the level of manufacturing activity. If, for example, the railroads are busy transporting large quantities of manufactured goods and raw materials, they will require more locomotives, freight cars, and other capital facilities produced by the manufacturing industries. Each of these productive sources is dependent on the others, and each in turn affects the level of activity of the others.

In the following sections an attempt will be made to delineate that portion of the gross transport product of Communist China contributed by the railroads in 1955 and 1956 and by the inland waterways in 1956.\* Although Chinese Communist data are used in the estimates, they have been arranged in such a way as to be consistent with US practice in GNP analysis.

## II. Gross Product of the Railroads.

### A. Comparison with Total GNP.

The gross product of the railroads of Communist China is estimated to have been 1.581 billion yuan in 1955 and 2.141 billion yuan in 1956. Gross product was derived by adding wages of operating employees, social insurance costs, depreciation allowances, profits, and taxes as shown in Table 1.\*\*

The gross product of the railroads of Communist China in 1955 is estimated to have been about 1.71 percent of the total GNP in 1955

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\* The gross product estimates in this research aid pertain only to railroad and inland waterway operations. Limitations of data made necessary the exclusion of such items as handling charges, stevedoring charges, major repairs, and construction activities, which may also be associated with the Ministry of Railroads or the Ministry of Communications.

\*\* Table 1 follows on p. 5.

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Table 1

Summary of the Estimated Gross Product  
of the Railroads of Communist China a/  
1955-56

	Million Yuan	
	<u>1955</u>	<u>1956</u>
Wages and social insurance costs	296	339
Depreciation (other than basic)	225	275
Profits and basic depreciation	1,009	1,463
Taxes	51	64
Gross product	<u>1,581</u>	<u>2,141</u>

a. For a detailed derivation of estimates, see  
Tables 4 and 5, Appendix A, p. 16 and 18, respec-  
tively, below.

and about 2.01 percent in 1956.\* The increase in the proportional contribution of the railroads to GNP probably reflects, at least in part, the rapid industrialization of the country -- that is, the increase in the level of activity of the industrial sector. The demand for railroad transport in Communist China has increased tremendously since 1950, and as a consequence the railroads have been forced to work at close to capacity during 1950-58. This same trend is expected to continue in the foreseeable future, and thus the proportional contribution of the railroads to GNP may be expected to increase slightly on an annual basis. In fact, one Chinese writer has emphasized that the increase in industrial production will "expand the service of the departments of commodity transport and commerce and also the national income these departments create." 4/

In the US the railroads contributed about 2.11 percent of national income\*\* in 1956. 5/ In Communist China, where the agricultural sector contributed 44.1 percent of GNP and the industrial sector only

\* The total GNP is estimated to have been 92.26 billion yuan in 1955 and 106.58 billion yuan in 1956 in current market prices. 3/

\*\* GNP minus the depreciation of capital facilities is equal to net national product. Net national product minus indirect business taxes plus government subsidies is equal to national income. The relationship between railroad income and national income and between railroad gross product and GNP should be approximately the same.

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17.5 percent, the gross product of the railroads was equal to 11.4 percent of the gross product of industry. In the US, however, where the agricultural sector contributed only 4.7 percent of national income and the manufacturing and mining sectors 33.3 percent, the income contributed by the railroads was equal to 6.4 percent of the income contributed by industry and mining. In the US the railroads carry less than 50 percent of total ton-kilometers (tkm)\* produced by modern transport, whereas in China the proportion is more than 80 percent. The following tabulation summarizes these relationships for 1956:

Communist China		US	
Item	Percent	Item	Percent
Contribution of railroads to transport ton-kilometers	82.8	Contribution of railroads to transport ton-kilometers	48.2
Gross product of railroads as a percent of gross industrial product	11.4	Income of railroads as a percent of industrial income	6.4
Contribution of railroads to gross national product	2.01	Contribution of railroads to national income	2.11
Contribution of industry to gross national product	17.5	Contribution of industry to national income	33.3
Contribution of agriculture to gross national product	44.1	Contribution of agriculture to national income	4.7

#### B. Comparison with Other Measures of Performance.

In 1956 the gross product of the railroads of Communist China was 35.4 percent above that of 1955. At the same time, operating revenue increased by 25.1 percent. The more than proportionate increase in the gross product resulted primarily from an increase in operating efficiency represented by a 12.8-percent decrease in operating costs per ton-kilometer. This trend was buttressed by an increase of 2.2 percent in operating revenue per ton-kilometer. These relationships are shown in Table 2,\*\* where they are compared with other measures of operating performance.

Although sufficient data are not available to calculate the gross product of the railroads for the years 1950-54, a comparison of the total costs of railroad operation with net profit and total revenue

\* Tonnages are given in metric tons throughout this research aid.

\*\* Table 2 follows on p. 7.

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Table 2

Estimated Gross Product of the Railroads of Communist China  
Compared with Other Measures of Operating Performance <sup>a/</sup>  
1955-56

Measure of Performance	Unit	1955	1956	Percent Increase 1956 above 1955
Gross product	Billion yuan	1.581	2.141	35.4
Operating revenue	Billion yuan	2.051	2.565	25.1
Operating cost	Yuan per thousand combined ton-kilometers <sup>b/</sup>	8.80	7.67	-12.8
Operating revenue	Yuan per thousand combined ton-kilometers	16.22	16.57	2.2
Combined ton-kilometers <sup>b/</sup>	Billion ton-kilometers	126.4	154.8	22.5
Freight ton-kilometers	Billion ton-kilometers	98.1	120.4	22.7
Passenger-kilometers	Billion passenger-kilometers	28.3	34.4	21.6
Freight tons originated	Million tons	193.4 <sup>c/</sup>	246.1 <sup>d/</sup>	27.2
Passengers carried	Million passengers	208 <sup>e/</sup>	250 <sup>f/</sup>	20.2

a. For a detailed derivation of estimates, see Tables 4 and 5, Appendix A, p. 16 and 18, respectively, below.

b. Combined ton-kilometers (or total traffic kilometers) equals freight ton-kilometers plus passenger-kilometers. Freight ton-kilometers and passenger-kilometers are combined on the basis of 1 to 1. According to a Soviet expert on railroad statistics, the labor and cost of 1 passenger-kilometer is about the same as that for 1 freight ton-kilometer. <sup>6/</sup>

c. <sup>7/</sup>

d. <sup>8/</sup>

e. Derived by dividing the 1956 figure of 250 million by 120 percent. <sup>2/</sup>

f. <sup>10/</sup>

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gives some indication of the trend which took place in the gross product during 1950-56. These relationships are shown in Table 3.\* During 1950-56 the operating cost per 1,000 combined ton-kilometers decreased by approximately 22 percent, whereas the operating revenue per 1,000 combined ton-kilometers increased by 32 percent. At the same time, net profit increased by 968 percent, total operating revenue by 294 percent, and total operating costs by only 132 percent. Gross product probably increased at a rate somewhat less than net profit during this period but at a rate considerably higher than that of total operating revenue.

C. Components of Gross Product of the Railroads.

1. Wages and Social Insurance.

The value of wages, salaries, and contributions to social insurance is an integral part of gross product because it represents the contribution of labor to the final product. Contributions to social insurance are included because they are usually considered a part of the cost of using labor. In 1956 the costs of wages and social insurance of the railroads of Communist China amounted to approximately 339.5 million yuan, or 28.6 percent of the total operating costs. 11/ In 1955 the figure was 296.3 million yuan, or 26.6 percent of the total operating costs. Social insurance costs were reported to be 14 percent of the total wage fund of the nation in 1956. 12/ For railroad workers a sum amounting to about 16.1 percent of the payroll supposedly is set aside for social insurance. 13/ On this basis, total wages for railroad workers amounted to 292.4 million yuan in 1956 and social insurance costs to 47.1 million yuan. The figures for 1955 were 255.2 million yuan and 41.1 million yuan, respectively.

Inasmuch as the average annual wage of active operating railroad workers in 1956 was 800.88 yuan, 14/ it appears that the total number of active operating railroad workers amounted to 365,000 in 1956. This figure is to be compared with a figure of 370,000 workers derived from an announcement that labor productivity of railroad workers in 1956 was 418,000 combined ton-kilometers per worker. 15/ Direct statements concerning the size of the railroad labor force have ranged from 860,000 in mid-1957 16/ to 2.04 million in 1955. 17/ Several of these statements indicate that there were from 1.2 million to 1.3 million railroad workers and staff members as of late 1957 or early 1958. 18/ These latter figures apparently include numerous staff and administrative personnel and probably most of the workers engaged in new construction activities -- that is, anyone associated in any way with the Ministry of Railroads. On the other hand, the operating statistics quoted by the Chinese Communists apparently refer only to the hard core of active operating

\* Table 3 follows on p. 9.

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Table 3

Summary of Estimated Costs, Profits, and Revenue of the Railroads  
of Communist China a/  
1950-56

Year	Operating Cost per 1,000 Combined TKM (Yuan)	Index of Operating Cost per 1,000 Combined TKM (1950=100)	Total Operating Cost (Million Yuan)	Index of Total Operating Cost (1950=100)	Net Profit (Million Yuan)	Index of Net Profit (1950=100)	Taxes (Million Yuan)	Operating Revenue b/ (Million Yuan)	Index of Operating Revenue (1950=100)	Operating Revenue per 1,000 Combined TKM (Yuan)	Index of Operating Revenue per 1,000 Combined TKM (1950=100)
1950	9.84	100	511	100	123	100	16	651	100	12.52	100
1951	9.50	97	620	121	320	260	24	965	148	14.78	118
1952	9.15	93	733	143	492	400	31	1,257	193	15.68	125
1953	8.87	90	946	185	702	571	42	1,690	260	15.85	127
1954	8.60	87	1,052	206	824	670	48	1,924	296	15.73	126
1955	8.80	89	1,113	218	887	721	51	2,051	315	16.22	130
1956	7.67	78	1,187	232	1,314	1,068	64	2,565	394	16.57	132

a. For a detailed derivation of estimates, see Table 6, Appendix A, p. 21, below.

b. Totals are derived independently from unrounded figures and do not always agree with the sum of their rounded components.

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personnel engaged in actual railroad activities. In any set of complete national accounts the nonoperating workers would be included either in the comprehensive modern transportation and communications sector or in the sectors to which they are ancillary, such as the construction sector or the government sector.

2. Depreciation and Profits.

a. Depreciation.

The amount of decline in the value of an asset during any one year represents the cost of using the asset for production during that year. This decline in value is termed "depreciation expense" and must be considered as a part of the cost of producing the goods or services sold during the year. When the services of plant or equipment are used up during the production process, these services become a part of the final product. <sup>19/</sup> For the railroads, consumption of capital goods is, in effect, a transformation of a portion of these capital goods into the final service rendered to shippers. This decline in the value of capital goods is represented by charges for depreciation which must be included in the calculation of gross product.

The charge for depreciation on the railroads of Communist China in 1956 amounted to approximately 423.7 million yuan, or 35.7 percent of the total operating costs, <sup>20/</sup> and in 1955 to 346.2 million yuan, or 31.1 percent of the total operating costs.\* The rate of depreciation for railroad transport in 1956 reportedly was 3.7 percent (of which 1.3 percent was for basic depreciation).\*\* <sup>24/</sup> This rate of depreciation should be viewed in relation to the total fixed assets of the railroads, which were valued very roughly at 11.45 billion yuan in 1956, or about 74 yuan for each 1,000 combined ton-kilometers produced. In general the transportation industry of Communist China possesses a comparatively large amount of fixed property.

\* In September 1958 the International Railway Congress Association, at its Madrid meeting, discussed the financial means used for the normal renewal of permanent installations and rolling stock. A report based on practice in English-speaking countries and on certain railroads overseas which tend to follow English practice indicated that the expenditure in connection with the maintenance and renewal of railroad installations should represent 35 to 50 percent of the total operating costs. <sup>21/</sup> Although the Chinese Communist figures of 31.1 percent and 35.7 percent for 1955 and 1956, respectively, may appear at first glance to be high, they apparently are in line with the experience of some Western countries. In the US, however, depreciation and retirements amounted to only 7 percent of the total operating costs in 1955. <sup>22/</sup>

\*\* The Chinese differentiate between basic depreciation and depreciation to take care of the expense of major overhauls. <sup>23/</sup>

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The Ministry of Railroads reportedly stands at the top of the list of all the large departments of the nation's economy with respect to the amount of fixed property possessed by each department.\* 25/

b. Profits.

Total profit is the difference between total costs and total revenues, representing what is left over after the correct amount has been allocated to pay all the proper costs and expenses of the enterprise. 31/ Because profit in Communist China is interpreted in a broad sense as including returns to all the factors of production other than labor, 32/ it must be included in the calculation of gross product. 33/

\* The amount of fixed property possessed by the transportation industry of Communist China reportedly constitutes about 30 percent of the total fixed property of the nation, 26/ even though investment in railroads during 1953-57 amounted to only 12 or 13 percent of completed capital construction investment. If investment in other forms of transportation and communication is added to investment in railroads, the figure approaches 20 percent of the total. 27/ In the US the percentage of national wealth invested in railroads, shipping, canals, and motor vehicles ranged from 28.5 percent in 1880 to 22 or 23 percent in 1939. 28/ During 4 or 5 postwar years the average percentage of gross investment devoted to railroads, shipping, air transportation, motor traffic, and communications in several European countries was as follows 29/:

<u>Country</u>	<u>Percent</u>
Belgium	24
Norway	30
United Kingdom	17
Netherlands	23
France	19

In a number of countries, investment in transportation has been found to range between 20 and 30 percent of gross domestic investment. Countries with economic plans have generally allocated to the transportation sector from 18 percent to as much as 40 percent of planned public investment. Some sample percentages are as follows 30/:

<u>Country</u>	<u>Percent</u>
Afghanistan	40
Cambodia	34
India	29
Pakistan	18

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In early 1958, in an address to the national conference of delegates of the Chinese railroad labor union, T'eng Tai'yuan, Minister of Railroads, reported that during the period of the First Five Year Plan (1953-57) the aggregate surplus of railroad revenue over operating expenses remitted to the central government was 6.1 billion yuan. This figure included both profits and capital depreciation funds. 34/ A comparison of the 6.1 billion yuan figure with the reported annual profits for the same period indicates that when the Chinese Communists use the term profits, they mean profits plus basic depreciation. Thus reported railroad profits of 1.463 billion yuan for 1956 35/ probably mean net profits plus basic depreciation allowances. Because the basic depreciation allowance for 1956 has been calculated independently as 148.9 million yuan, net profit in that year must have been about 1.314 billion yuan. The corresponding figures for 1955 were 1.009 billion yuan for profits plus depreciation and 887 million yuan for net profit.

During the period of the First Five Year Plan, investment in railroads was reported to have amounted to 6.16 billion yuan. 36/ This figure is almost identical with the 6.1 billion yuan figure for profits plus basic depreciation allowances turned over to the central government during the same period. Thus the railroads earned almost enough to pay for the construction of new lines, double tracking, expansion of classification yards, and the purchase of new locomotives and cars during the period. 37/

### 3. Purchases from Other Sectors.

If the value-added method had been used to calculate the total market value of the output of the railroad sector of the economy of Communist China, it would have been necessary to deduct purchases for productive purposes from gross revenues. Purchases which the railroads make from other sectors of the economy include such items as fuel and electricity, supplies, medium and minor repairs, and other miscellaneous items. In 1956 these items amounted to approximately 35.7 percent of total operating costs, as follows 38/:

<u>Item</u>	<u>Percent</u>
Fuel and electricity	12.0
Supplies	9.5
Medium and minor repairs	8.3
Other	5.9
Total	<u>35.7</u>

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### III. Gross Product of the Inland Waterways.

In 1956 the gross product of the inland waterways of Communist China is estimated to have been about 158.9 million yuan,\* or an amount equal to 7.4 percent of railroad gross product. In the same year the combined ton-kilometer performance of the inland waterways was equal to 10.5 percent of the combined ton-kilometer performance of the railroads. Part of this difference in percentages is accounted for by the fact that the operating cost of inland waterway transport per 1,000 combined ton-kilometers (at least on the Yangtze River) was about 43 percent greater than the cost of railroad transport. 39/

In 1956 the wage and social insurance costs of the inland waterways of Communist China amounted to approximately 50.6 million yuan, or 28.3 percent of the total operating costs. 40/ If social insurance costs are assumed to be about 15 percent of the total payroll, then total wages for inland waterway workers amounted to 44.0 million yuan in 1956 and social insurance costs to 6.6 million yuan. Inasmuch as the average annual wage for inland waterway workers was 1,009.1 yuan,\*\* it appears that the total number of active operating inland waterway workers amounted to 43,600 in 1956. This figure is to be compared with a figure of 43,700 workers derived from a statement that labor productivity of inland waterway workers in 1956 was 373,000 combined ton-kilometers per worker on the Yangtze River. 42/ The Chinese Communists have announced that the labor force employed by government-operated river and maritime transport and harbor operations was about 162,000 in 1956. 43/ This figure apparently includes workers employed in coastal shipping as well as inland waterway transport and undoubtedly includes stevedores and longshoremen as well as many administrative and staff personnel of the Ministry of Communications not connected directly with waterway operations. In any set of complete accounts the nonoperating workers would be included either in the comprehensive modern transportation and communications sector or in the sectors to which they are ancillary, such as the construction sector or the government sector.

In 1956 the depreciation charge on the inland waterways of Communist China amounted to approximately 36.0 million yuan, or 20.1 percent of the total operating costs. 44/ Depreciation charges per unit of output for inland waterway transport on the Yangtze River were 19.7 percent less than for railroad transport because the waterway depreciation charges contained no item for depreciation of roadbed and track. If

\* For a detailed derivation of estimates, see Table 7, Appendix A, p. 23, below.

\*\* The average annual wage can be derived from a statement that the average wages of operational workers in river transport are about 26 percent higher than on the railroads. 41/

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depreciation charges are computed per horsepower, however, they are much higher for inland waterway vessels than for railroad motive power. In 1956 the depreciation rate for inland waterway transport on the Yangtze River was 6 percent, of which 3.2 percent was for basic depreciation. This rate was considerably higher than that for railroad transport of 3.7 percent, of which 1.3 percent was for basic depreciation. <sup>45/</sup> The depreciation rate for inland waterway transport should be viewed in relation to the total fixed assets of the inland waterways of approximately 600 million yuan, or about 37 yuan per 1,000 combined ton-kilometers.

In 1956 the rate of profit earned by inland water transport on the Yangtze River was only one-third the rate earned on the railroads. <sup>46/</sup> If this relationship is assumed for the entire country, then inland waterway net profit amounted to approximately 66.0 million yuan in 1956. Inasmuch as the allowance for basic depreciation has been calculated as 19.2 million yuan, profit plus basic depreciation must have amounted to approximately 85.2 million yuan.

In 1956 the purchases made by inland waterway enterprises of Communist China from other sectors of the economy amounted to approximately 51.6 percent of the total operating costs as follows <sup>47/</sup>:

<u>Item</u>	<u>Percent</u>
Fuel and electricity	20.7
Supplies	6.7
Medium and minor repairs	13.8
Other	10.4
Total	<u>51.6</u>

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APPENDIX A

STATISTICAL TABLES

S-E-C-R-E-T

Table 4

Estimated Gross Product  
of the Railroads of Communist China  
1956

Thousand Yuan

Allocations		Sources	
Wages and cost a/	339,462 b/	Gross revenue	2,564,751 c/
Depreciation d/	274,855 d/	Minus: cost of goods,	
Profits e/	1,462,580 f/	materials, and serv-	
Taxes	64,119 g/	ices purchased from	
		other sectors:	423,735 b/
		Fuel and electricity	(142,432) b/
		Supplies	(112,759) b/
		Medium and minor	
		repairs	(98,515) b/
		Other	(70,029) b/
Total gross product	<u>2,141,016</u>	Total value added	<u>2,141,016</u>

a. Including social insurance costs.

b. In 1956, railroad traffic performance was as follows: 120.35 billion tkm 48/ plus 34.40 billion passenger km 49/ equals 154.75 billion combined tkm. The cost per 1,000 combined tkm was 7.67 yuan. 50/ Then 154,750,000 combined tkm multiplied by 7.67 equals 1,186,932,000 yuan total cost. The percentage allocation of total cost in 1956 was as follows: 51/

Category of Cost	Percent
Wages and cost	28.6
Fuel and electricity	12.0
Supplies	9.5
Repairs	8.3
Depreciation	35.7
Other	5.9
Total	<u>100.0</u>

Applying the 1956 percentage allocation of total cost to the 1956 total cost figure of 1,186,932,000 yuan results /footnote continued on p. 17/

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Table 4

Estimated Gross Product  
of the Railroads of Communist China  
1956  
(Continued)

in the following breakdown:

<u>Category of Cost</u>	<u>Thousand Yuan</u>
Wages and cost	339,462
Fuel and electricity	142,432
Supplies	112,759
Repairs	98,515
Depreciation	423,735
Other	70,029
Total	<u>1,186,932</u>

c. Total gross product plus cost of goods, materials, and services purchased from other sectors.

d. The Chinese differentiate between basic depreciation and depreciation to take care of the expense of major overhauls. The rate of depreciation for railroad transport in 1956 reportedly was 3.7 percent, of which 1.3 percent was for basic depreciation. 52/ The total figure for depreciation, 423,735,000 yuan, thus breaks down into a figure of 148,880,000 yuan for basic depreciation and 274,855,000 yuan for depreciation for major overhauls.

e. The figure for basic depreciation, 148,880,000 yuan, probably is included in the figure for profits. 53/

f. The planned total of profits to be yielded by all the railroads in 1957 was 1,457,450,000 yuan. This figure was 155,610,000 yuan more than the planned figure for 1956 but 5,130,000 yuan less than the actual profit realized in 1956. 54/ Therefore, 1,457,450,000 yuan plus 5,130,000 yuan equals 1,462,580,000 yuan profit in 1956.

g. Figured at 2.5 percent of gross revenue. 55/

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Table 5

Estimated Gross Product  
of the Railroads of Communist China  
1955

		Thousand Yuan	
Allocations		Sources	
Wages and cost a/	296,291 b/	Gross revenue	2,051,008 c/
Depreciation d/	224,534 d/	Minus: cost of goods,	
Profits e/	1,008,798 f/	materials, and serv-	
Taxes	51,275 g/	ices purchased from	
		other sectors:	470,110 h/
		Fuel and electricity	(157,983) h/
		Supplies	(125,163) h/
		Medium and minor	
		repairs	(109,364) h/
		Other	(77,600) h/
Total gross product	<u>1,580,898</u>	Total value added	<u>1,580,898</u>

a. Including social insurance costs.

b. In 1955, railroad traffic performance was as follows: 98.127 billion tkm 56/ plus 28.300 billion passenger km equals 126.427 billion combined tkm. In 1955, labor productivity was 353,000 tkm per worker. 57/ Then 126.427 billion combined tkm divided by 353,000 tkm per worker equals 358,150 workers. In 1955 the average monthly wage for railroad workers was 59.38 yuan. 58/ Then 59.38 yuan multiplied by 12 equals 712.56 yuan, average yearly wage per worker, and 712.56 yuan multiplied by 358,150 workers equals 255,203,364 yuan total wage cost. Social insurance costs are equal to 16.1 percent of total wages, 59/ and 255,203,364 multiplied by 0.161 equals 41,087,742 yuan social insurance costs. Therefore, 255,203,364 yuan plus 41,087,742 yuan equals 296,291,106 yuan wages plus social insurance costs.

c. Total gross product plus cost of goods, materials, and services purchased from other sectors. In September 1956 the head of the Chinese Communist Railway Planning Bureau indicated that in 1955 the income from the railroads was 2.05 billion yuan. 60/

d. In 1956 the total fixed assets of the railroads amounted to approximately 11,452,297,000 yuan, derived as follows: 423,735,000 yuan depreciation divided by the 0.037 rate of depreciation equals 11,452,297,000 yuan total fixed assets. Then footnote continued on p. 19/

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S-E-C-R-E-T

Table 5

Estimated Gross Product  
of the Railroads of Communist China  
1955  
(Continued)

11,452,297,000 yuan divided by 154.75 billion combined tkm (see Table 4, footnote b, p. 16, above) equals 74 yuan of fixed assets per 1,000 combined tkm. Assuming 74 yuan of fixed assets per 1,000 combined tkm in 1955, the figure for total fixed assets in 1955 can be derived as follows: 126,427,000 tkm multiplied by 74 yuan equals 9,355,598,000 yuan. Then 9,355,598,000 yuan multiplied by 0.037 equals 346,157,000 yuan for total depreciation; 9,355,598,000 yuan multiplied by 0.013 equals 121,623,000 yuan for basic depreciation; and 9,355,598,000 yuan multiplied by 0.024 equals 224,534,000 yuan for depreciation for major overhauls.

e. The figure for basic depreciation, 121,623,000 yuan, probably is included in the figure for profits.

f. If the 1952 level is taken as 100 percent, profit received by rail transport in 1955 amounted to 171.4 percent and in 1956 to 248.5 percent. 61/ Profits for 1956 were announced as 1,462,580,000 yuan. 62/ Therefore, profits for 1955 amounted to 1,008,798,000 yuan (1,462,580,000 yuan divided by 2.485 equals 588,563,380 yuan profit in 1952; then 588,563,380 yuan multiplied by 1.714 equals 1,008,798,000 yuan profit in 1955).

g. Figured at 2.5 percent of gross revenue.

h. In 1955 the cost per 1,000 combined tkm was 8.80 yuan. 63/ Then 126,427,000 combined tkm multiplied by 8.80 yuan equals 1,112,558,000 yuan total cost. Total depreciation of 346,157,000 yuan is equal to 31.11 percent of total cost. Wages and social insurance costs of 296,291,000 yuan are equal to 26.63 percent of total cost. Thus fuel and electricity, supplies, repairs, and other costs are equal to 42.26 percent of total cost, broken down as follows in the same proportions as in 1956:

<u>Category of Cost</u>	<u>Percent</u>
Fuel and electricity	14.20
Supplies	11.25
Repairs	9.83
Other	6.98
Total	<u>42.26</u>

[Footnote continued on p. 20]

S-E-C-R-E-T

S-E-C-R-E-T

Table 5

Estimated Gross Product  
of the Railroads of Communist China  
1955  
(Continued)

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Applying the above percentage allocations to the 1955 total cost of 1,112,558,000 yuan results in the following absolute figures:

<u>Category of Cost</u>	<u>Thousand Yuan</u>
Fuel and electricity	157,983
Supplies	125,163
Repairs	109,364
Other	77,600*
Total	<u>470,110</u>

\* Adjusted so that the sum of individual cost figures equals the total cost of 1,112,558,000 yuan.

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Table 6  
Estimated Cost, Profits, and Revenue of the Railroads  
of Communist China  
1950-56

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Year	Freight Ton-Kilometers (Billion) <u>a/</u>	Passenger Kilometers (Billion)	Combined Ton-Kilometers <u>b/</u> (Billion)	Operating Cost per 1,000 Combined TKM (Yuan)	Total Operating Cost <u>c/</u> (Thousand Yuan)	Index of Profits Plus Basic Depreciation (1952=100)	Total Profit Plus Basic Depreciation (Yuan)	Basic Depreciation as Percent of Total Operating Costs	Basic Depreciation (Thousand Yuan)	Net Profit (Thousand Yuan)	Basic Depreciation as Percent of Profit Plus Depreciation <u>d/</u>	Operating Cost Plus Net Profit <u>e/</u> (Thousand Yuan)	Taxes <u>f/</u> (Thousand Yuan)	Operating Revenue <u>g/</u> (Thousand Yuan)	Operating Revenue per 1,000 Combined TKM <u>h/</u> (Yuan)
1950	39.375	12.600 <u>b/</u>	51.975	9.84 <u>i/</u>	511,434	33.9 <u>i/</u>	199,523,000 <u>h/</u>	15.0 <u>i/</u>	76,715 <u>h/</u>	122,808 <u>h/</u>	38.4	634,242	16,263	650,505	12.52
1951	51.500	13.800 <u>g/</u>	65.300	9.50 <u>h/</u>	620,350	69.2 <u>h/</u>	407,256,000 <u>h/</u>	14.0 <u>h/</u>	86,949 <u>h/</u>	320,437 <u>h/</u>	21.3	940,787	24,123	964,910	14.78
1952	60.153	20.000 <u>g/</u>	80.153	9.15 <u>h/</u>	733,400	100.0 <u>h/</u>	386,563,380 <u>h/</u>	13.2 <u>h/</u>	96,565 <u>h/</u>	492,000 <u>h/</u>	16.4	1,225,400	31,421	1,256,821	15.68
1953	78.057	26.600 <u>h/</u>	104.657	8.87 <u>h/</u>	946,048	140.2 <u>h/</u>	825,166,000 <u>h/</u>	13.0 <u>h/</u>	122,366 <u>h/</u>	702,180 <u>h/</u>	14.9	1,648,228	42,262	1,690,490	15.85
1954	93.223	29.100 <u>h/</u>	122.323	8.60 <u>h/</u>	1,051,978	161.4 <u>h/</u>	949,941,000 <u>h/</u>	12.0 <u>h/</u>	126,237 <u>h/</u>	823,704 <u>h/</u>	13.3	1,875,682	48,094	1,923,776	15.73
1955	98.127	28.300 <u>h/</u>	126.427	8.30 <u>h/</u>	1,112,558	171.4 <u>h/</u>	1,005,798,000 <u>h/</u>	10.9 <u>h/</u>	121,623 <u>h/</u>	887,175 <u>h/</u>	12.1	2,000,733	51,475	2,052,208	16.22
1956	120.350	34.400 <u>h/</u>	154.750	7.67 <u>h/</u>	1,186,932	248.5 <u>h/</u>	1,462,580,000 <u>h/</u>	12.5 <u>h/</u>	148,880 <u>h/</u>	1,313,700 <u>h/</u>	10.2	2,360,632	64,119	2,424,751	16.37

a. 65/  
b. Column 1 plus column 2.  
c. Column 3 multiplied by column 4.  
d. Column 9 divided by column 7.  
e. Column 5 plus column 10.  
f. Total operating cost plus net profit equals 97.5 percent of gross revenue.  
Taxes equals 2.5 percent of gross revenue. Column 14 was derived by dividing column 12 by 0.975. Column 13 equals column 14 minus column 12.  
g. Column 14 divided by column 3.  
h. Calculated by dividing the 1951 figure of 13,848 billion passenger-kilometers by 109.6 percent. 65/  
i. 66/  
j. 67/  
k. Calculated by using the index in column 6 and the absolute figure for 1956.  
l. Estimates.  
m. Column 8 multiplied by column 5.  
n. Column 7 minus column 9.  
o. Plan goal of 12.420 billion passenger-kilometers multiplied by 111.5 percent. 68/  
p. Interpolated.  
q. 69/  
r. In 1957, operating cost was 7.22 yuan per 1,000 combined ton-kilometers. 70/ During 1953-57, operating cost was to be reduced by 21.1 percent. 71/  
s. 72/  
t. Column 9 divided by column 5.  
u. Column 7 minus column 10.  
v. US \$200,000,000 73/ converted to yuan at the rate of 2.46 yuan to US \$1.  
w. Calculated by multiplying 222 million passengers carried by the average length of haul of 129 kilometers.  
x. 1952 figure of 20,041 billion passenger-kilometers multiplied by 145 percent. 74/  
y. 3 percent below the figure for 1953. 75/  
z. Calculated by multiplying 208 million passengers carried by the average length of haul of 136 kilometers.  
aa. 76/  
bb. See Table 5, p. 18, above.  
cc. 77/  
dd. 78/  
ee. 79/  
ff. See Table 4, p. 16, above.

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Table 7

Estimated Gross Product  
of the Inland Waterways of Communist China  
1956

		Thousand Yuan	
Allocations		Sources	
Wages and cost a/	50,628 b/	Gross revenue	251,193 c/
Depreciation d/	16,781 d/	Minus: cost of goods,	
Profits e/	85,192 f/	materials, and serv-	
Taxes	6,280 g/	ices purchased from	
		other sectors:	92,312 b/
		Fuel and electricity	(37,032) b/
		Supplies	(11,986) b/
		Medium and minor	
		repairs	(24,688) b/
		Other	(18,606) b/
Total gross product	<u>158,881</u>	Total value added	<u>158,881</u>

a. Including social insurance costs.

b. In 1956, inland water traffic performance was as follows:  
12.900 billion tkm 80/ plus 3.408 billion passenger km\* equals  
16.308 billion combined tkm. Cost per 1,000 combined tkm on the  
Yangtze River was 10.97 yuan. 82/ For purposes of this research  
aid, the 10.97 yuan figure has been assumed to apply to all inland  
water transport in Communist China in 1956. Then 16,308,000 com-  
bined tkm multiplied by 10.97 yuan equals 178,899,000 yuan total  
cost. Percentage allocation of total cost on the Yangtze River in  
1956 was as follows: 83/ [footnote continued on p. 24/]

\* First Five Year Plan goal. 81/ Inasmuch as the Chinese Communists have not announced any absolute figures for the performance of inland water passenger transport, the First Five Year Plan goal has been used as a rough approximation of the performance in 1956. It is possible that this figure understates the actual performance in 1956.

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Table 7

Estimated Gross Product  
of the Inland Waterways of Communist China  
1956  
(Continued)

<u>Category of Cost</u>	<u>Percent</u>
Wages and cost	28.3
Fuel and electricity	20.7
Supplies	6.7
Repairs	13.8
Depreciation	20.1
Other	10.4
Total	<u>100.0</u>

Applying the 1956 percentage allocation of total cost on the Yangtze River to the 1956 total cost figure of 178,899,000 yuan results in the following breakdown:

<u>Category of Cost</u>	<u>Thousand Yuan</u>
Wages and cost	50,628
Fuel and electricity	37,032
Supplies	11,986
Repairs	24,688
Depreciation	35,959
Other	18,606
Total	<u>178,899</u>

c. Total gross product plus cost of goods, materials, and services purchased from other sectors.

d. The rate of depreciation for inland water transport on the Yangtze River in 1956 reportedly was 6 percent, of which 3.2 percent was for basic depreciation. 84/ The total figure for depreciation, 35,959,000 yuan, thus breaks down into a figure of 19,178,000 yuan for basic depreciation and 16,781,000 yuan for depreciation for major overhauls.

e. The figure for basic depreciation, 19,178,000 yuan, is included in the figure for profits.

f. Based on a statement that in 1956 the rate of profit earned in transportation on the Yangtze River was only one-third that earned on the railroads. 85/ The railroad [footnote continued on p. 25]

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Table 7

Estimated Gross Product  
of the Inland Waterways of Communist China  
1956  
(Continued)

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rate of pure profit in 1956 is estimated to have been 110.7 percent, derived as follows: 1,313,700,000 yuan pure profit divided by 1,186,932,000 yuan total cost equals 110.7 percent rate of profit. One-third of 110.7 percent is equal to 36.9 percent, the estimated rate of profit for transport on the Yangtze River. For purposes of this research aid, the 36.9 percent figure has been assumed to apply to all inland water transport. Therefore, 178,899,000 yuan total cost multiplied by 36.9 percent equals 66,014,000 yuan pure profit. Then 66,014,000 yuan pure profit plus 19,178,000 yuan for basic depreciation is equal to 85,192,000 yuan. g. Figured at 2.5 percent of gross revenue. 88/

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APPENDIX B

GAPS IN INTELLIGENCE

Little information is available on the total operating revenues of railroad, highway, inland waterway, or coastal shipping transport in Communist China for any year since 1950. Detailed figures on costs, including such items as wages and salaries, social insurance, supplies, repairs, fuel, and depreciation, are lacking for all forms of transport for all years since 1950 except for railroads and inland waterways in 1956. Figures on profits are lacking for all forms of transport except railroads during 1952-56. Figures on revenue, costs, and profits are desired either in total or on a per ton-kilometer basis for each type of transport. The relationship between profits and depreciation charges needs further clarification. Also required are the number of employees for each type of transport and the average wage per employee. The total labor force for each type of transport should be broken down into the operating labor force and all workers connected in any way with either the Ministry of Railroads or the Ministry of Communications. Also needed are figures on passenger-kilometer performance for highway, inland waterway, and coastal shipping transport.

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## APPENDIX C

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer; all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this research aid. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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8.  
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9.

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74. [REDACTED]

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80. [REDACTED]

81. CIA. FDD Translation no 478 (69, above)

82. CIA. FDD Summary no 1795, 10 Jun 58, p. 36. OFF USE.  
Eval. RR 2.

83. Ibid., p. 37. OFF USE. Eval. RR 2.

84. Ibid., p. 42. OFF USE. Eval. RR 2.

85. Ibid., p. 36. OFF USE. Eval. RR 2.

86. State, Hong Kong. Current Background, no 527, 27 Oct 58,  
p. 5, 13. U. Eval. RR 2.

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